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Marriage as a Risk Factor for Internalizing Disorders: Clarifying Scope and Specificity

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Abstract

Objective—Marital discord has been linked to both depression and anxiety; however, our understanding of how marriage contributes to the development of internalizing symptoms is limited in scope and lacking specificity. First, it is unclear whether the marital relationship contributes to the broad dimension of internalizing symptoms as opposed to specific diagnoses. Second, it is unclear *how* the marital relationship contributes to internalizing symptoms: through global marital dissatisfaction or through specific relationship processes (and which processes). The purpose of the present study was to address these two issues and, more generally, to develop a comprehensive and refined framework within which to understand the role of marriage in the developmental course of internalizing symptoms.

Method—Questionnaire and interview data were collected from 102 husbands and wives 5 times over the first 7 years of marriage.

Results—Results indicated that marital discord during the transition into marriage was associated with the broad dimension of internalizing symptoms for husbands but not for wives. Further, both global marital dissatisfaction and an imbalance of power and control put husbands at significant risk for symptoms over the first 7 years of marriage, whereas low levels of emotional intimacy put wives at significant risk.

Conclusions—Results exemplify the need to routinely consider intimate relationship processes in etiological models of depression and anxiety, and identify specific clinical targets that can be prioritized in interventions aimed at preventing internalizing disorders.

Keywords

internalizing symptoms; relationship processes; depression; anxiety; couples

A wealth of research demonstrates a strong and consistent link between marital discord and depression (Whisman, Weinstock, & Tolejko, 2006). However, our understanding of the role of marriage in the development of psychopathology is narrow in scope and lacking

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Author Note

Rebecca L. Brock, Erika Lawrence, Department of Psychology, The University of Iowa. Although data from this sample have been published elsewhere (e.g., Barry, Bunde, Brock, & Lawrence, 2009; Brock & Lawrence, 2009), this is the first article in which the higher order construct of internalizing symptoms was examined, data from year 7 of marriage was included, and relationship processes were examined as predictors of internalizing symptoms. Portions of this article were presented at the Association for Behavioral and Cognitive Therapies Convention, November, 2009.

specificity. Most notably, research has been focused primarily on examinations of either depressive *or* anxiety disorders rather than on the general *internalizing dimension* shared by these disorders (e.g., Watson, 2005). Focusing on this shared dimension—rather than on the unique and frequently redundant features of specific DSM disorders—would presumably greatly enhance theoretical models of individual psychopathology (e.g., Krueger, 1999). Further, although it is well established that marital discord is associated with psychopathology, it is still unclear *how* marital discord increases one's risk. Both global marital dissatisfaction and specific relationship processes (e.g., supportive interactions) have been associated with depression and anxiety, but their relative influences have yet to be examined. Moreover, investigations of relationship processes have been limited almost entirely to conflictual interactions, with limited attention paid to domains such as emotional intimacy or power and control. These omissions are particularly problematic because they prevent researchers from clarifying -- and clinicians from targeting --the specific aspects of marriage most strongly influencing mental health. The purpose of the present study was to attain a more comprehensive yet refined understanding of the role of marriage in mental health by (a) determining whether marital discord at the onset of marriage is a risk factor for the general dimension of internalizing symptoms and (b) clarifying the relative contributions of marital dissatisfaction and specific relationship processes to symptom development over the first 7 years of marriage (the high risk period of marriage when over half of all divorces occur; Gottman & Levenson, 2000).

Countless book chapters, review articles, and empirical studies demonstrate a robust concurrent association between marital discord and depression in community and clinical samples. (See Whisman et al., 2006, and Whisman & Kaiser, 2008 for recent reviews.) Changes in marital satisfaction are associated cross-sectionally with changes in depressive symptoms over the early years of marriage (Davila, Karney, Hall, & Bradbury, 2003; Karney, 2001). Further, marital discord predicts higher levels of subsequent depressive symptoms 6 months (O'Hara, 1986), 12 months (e.g., Beach, Katz, Kim, & Brody, 2003), 18 months (e.g., Fincham, Beach, Harold, & Osborne, 1997), and 24 months (Whisman & Uebelacker, 2009) later. Far less research has focused on the link between marital discord and anxiety, though existing research does suggest an association between marital discord and anxiety disorders and symptoms (e.g., McLeod, 1994; Whisman, 1999, 2007; Whisman, Sheldon, & Goering, 2000; Whisman, Uebelacker, & Weinstock, 2004).

Though informative, there are three primary limitations to this literature, minimizing the utility of this knowledge to inform theoretical models and intervention efforts. First, whereas a great deal of research has focused on the association between marriage and depression, there is a dearth of knowledge regarding the link between marriage and *anxiety*. Research examining both depression and anxiety would greatly improve the scope of our understanding of the influence of marriage on mental health. Second, the majority of marital research conducted on depression or anxiety has been cross-sectional. Though an important first step, it does not speak to the issue of whether marital discord is a *risk factor* for symptoms (defined as a correlate that *temporally precedes* an outcome; Kraemer, Stice, Kazdin, Offord, & Kupfer, 2001). In order to develop or enhance prevention programs targeting psychopathology, longitudinal designs are needed to clarify whether marriage is indeed a *risk factor*, as opposed to a consequence, and to rule out the possibility that such an association is spurious in nature.

Third, prior studies predominantly have comprised examinations of depression or anxiety separately, implicitly suggesting that these disorders represent distinct entities. However, rates of comorbidity are extremely high among mood and anxiety disorders (Barlow, 2000; Clark, 2005; Mineka, Watson, & Clark, 1998; Watson, 2005), so it is unlikely that individuals will develop only one disorder. Indeed, depression and anxiety are increasingly

conceptualized as manifestations of a higher-order class of disorders (e.g., Watson, 2005). This broader conceptual approach fits well within the literature on predictors of psychopathology. That is, we know that individuals inherit a genetic vulnerability for experiencing negative affectivity in general rather than a specific disorder (Mineka et al., 1998). Consequently, researchers and clinicians are unable to predict which disorder(s) will ultimately develop (e.g., dysthymia versus panic disorder) for an individual possessing this innate vulnerability. Accordingly, studies examining marriage as a risk factor for the *broad class* of internalizing disorders—as opposed to a risk factor for an individual mood or anxiety disorder—would enhance the scope and explanatory power of our conceptual models of psychopathology.

Establishing that marriage is a global risk factor for the *general* dimension of internalizing symptoms is a critical endeavor; however, it does not clarify the specific nature of the effects of marriage on psychopathology. This problem is due primarily to the tendency to narrow "marriage" down to global satisfaction in prior studies. Focusing exclusively on marital satisfaction provides a limited perspective of how marriage contributes to mental health (Beach & O'Leary, 1993), and has prompted calls for investigations into the roles of specific relationship processes (e.g., conflictual interactions, supportive transactions) in the developmental course of psychopathology (e.g., Beach, 2002). Researchers and clinicians recognize that existing interventions for treating psychopathology would be greatly enhanced by identifying new clinical targets: "An increased understanding of the links between marital *processes* and depression" is critical for enhancing the efficacy and effectiveness of these interventions (emphasis added; Beach, Fincham, & Katz, 1998, p. 650).

Shifting the focus to relationship processes would enhance the specificity of theoretical models and interventions in several ways. First, it would allow researchers to capture specific aspects of the relationship not accounted for by global satisfaction measures (Beach, 2002). Second, relationship processes fit well into theories of marriage and mental health. For example, the *marital discord model of depression* (Beach, Sandeen, & O'Leary, 1990) suggests that couples who become maritally discordant experience changes in their relationships that, in turn, contribute to depression. Specifically, spouses experience increased negative interactions (e.g., conflict) that induce stress, and decreased positive functioning (e.g., support) which, in turn, leads to a reduced ability to cope with relationship challenges. A key tenet of this model is that relationship processes account for the link between marital discord and depression. Third, if relationship processes account for variance in symptoms when controlling for global satisfaction, we can refine prevention programs to target those processes. Such program refinements would presumably enhance the efficacy of those programs, as relationship processes can be directly targeted in interventions, whereas global satisfaction is targeted indirectly by altering marital functioning (e.g., teaching conflict management skills).

Based on Lawrence and colleagues' work (Lawrence, Brock, Barry, Langer & Bunde, 2009; Lawrence et al., 2008; Lawrence et al., 2011), and existing research demonstrating links between marital processes and psychopathology, four relationship processes were identified as particularly relevant to the present study:

Conflict/problem-solving interactions*:* frequency and length of arguments; behaviors engaged in during conflicts; presence, level and severity of aggression or withdrawal during arguments; emotions and behaviors during arguments; recovery strategies after arguments

Support transactions*:* quality of support when one partner is feeling down or has a problem; match between desired and received levels of support; whether support is

offered in a positive or negative manner; mutuality of support provided and received across both partners

Emotionally intimate transactions: mutual sense of closeness, warmth, interdependence and affection; comfort being emotionally vulnerable; comfort being oneself with partner; quality of self-disclosures; friendship; demonstrations of love and affection (verbal and physical expressions)

Balance of power and control in the relationship: couple's ability to negotiate control across a variety of areas (e.g., scheduling one's own day, finances); treatment of each other as competent, independent adults; a/symmetry in decision-making and power

One of the most widely examined relationship processes in relation to depression and anxiety is *conflict/problem-solving interactions*. Behavioral marital therapy—focused on enhancing communication and conflict management skills—is an empirically-supported treatment for major depression and dysthymia (Nathan & Gorman, 1998). Further, a considerable amount of research focused on various facets of conflict management—including frequency of arguments, problem-solving behaviors, and psychological and physical aggression—has demonstrated that conflict is associated with internalizing symptoms and disorders (Beach & Fincham, 1998; Cascardi, O'Leary, & Schlee, 1999; O'Leary & Cano, 2001; Rehman, Gollan, & Mortimer, 2007). Finally, there is a small body of literature indicating that conflict is also associated with anxiety (e.g., Lange & van Dyck, 1992; McLeod, 1994).

Relative to the literature on conflict and problem-solving, research focused on associations between other relationship processes and psychopathology is limited. Existing research has demonstrated that s*upport* is linked to internalizing disorders such that a lack of support is associated with depression (e.g., Barry, Bunde, Brock, & Lawrence, 2009; Brown, Andrews, Harris, Adler, & Bridge, 1986). Indeed, partner support appears to play a protective role in the mental health of individuals coping with a range of problems from chronic illness (e.g., Pistrang & Barker, 1995) to financial concerns (e.g., Lorenz, Conger, Montague, & Wickrama, 1993). In particular, to the extent that spouses receive adequate support from their partners, they also experience fewer depressive symptoms (Dehle, Larsen, & Landers, 2001).

Depression is also associated with lower levels of *emotional intimacy* (e.g., Costello, 1982; Waring & Patton, 1984; Waring, Patton, Neron, & Linker, 1986) and a less confiding relationship (e.g., Horwitz, McLaughlin, & White, 1997). Further, greater displays of affection and satisfaction with time spent with one's partner have been linked to fewer depressive symptoms experienced by wives (Hautzinger, Linden, and Hoffman, 1982). Uneven distributions of *power* in a relationship (Hautzinger et al.) and infringement upon one's personal rights (Smolen, Spiegal, & Martin, 1986) are associated with higher rates of depression. High levels of *control* in the marital relationship have been linked to a greater risk for postnatal depression (Schweitzer, Logan, & Strassberg, 1992). Further, depressed women are more likely to report dissatisfaction with decision-making, control of finances, and household task distribution (Byrne & Carr, 2000; Byrne, Carr, & Clark, 2004).

Further Methodological Refinements

In addition to the suggestions above, a series of methodological refinements are also necessary to clarify the role of marriage in the development of internalizing disorders. First, leaders in the field of psychology (e.g., Watson, 2005) have argued that internalizing disorders should be examined *dimensionally* (at the symptom level) as opposed to categorically (at the diagnostic level) in order to account for (a) comorbidity across and within mood and anxiety diagnoses and (b) heterogeneity within diagnostic classes (e.g.,

mood disorders) and disorders (e.g., major depressive disorder). A dimensional approach is advantageous because important information about subthreshold symptoms is retained (Trull & Durrett, 2005), and more sensitive analyses of the early developmental course of psychopathology can be conducted.

Second, to best inform prevention efforts, risk factors for internalizing disorders should be examined during a clinically meaningful period of time. The *National Institute of Mental Health* research agenda for prevention research (Reiss & Price, 1996) highlights the importance of examining risk factors during major life transitions (i.e., periods of time associated with rapid change and adjustment). An ideal transitional period within which to examine marital discord as a risk factor is *the transition into marriage* itself. This transition is experienced by 90% of the U.S. population (Kreider & Fields, 2001); as such, any findings will be highly generalizable. Additionally, the transition into marriage is widely recognized as one of the most important and influential transitions a person will experience in his or her lifetime (Leonard & Roberts, 1998). Finally, prevention programs targeting marital discord and dissolution already exist, are widely disseminated, and are typically implemented around the transition into marriage (e.g., the Prevention and Relationship Enhancement Program (PREP); Markman, Stanley, & Blumberg, 1994). If we can establish that discord during this life transition places couples at risk for a broad range of internalizing disorders, then these programs have the potential to not only prevent marital discord but also to prevent individual psychopathology.

Third, sex differences and cross-spouse associations should be routinely examined. Depression is more prevalent for women than for men, yet data are inconclusive with respect to sex differences in the association between marital discord and depression (Whisman et al., 2006). Further, prior research has been focused primarily on the link between one's own marital discord and one's own depression; however, marital relationships are dynamic and dyadic (Beach et al., 2003). Whereas some researchers have identified cross-spouse links between marital discord and depression (e.g., Beach et al., 2003; Whisman et al., 2004), others have not found significant associations (e.g., Whisman & Uebelacker, 2009). In order to understand the nature of these associations, within-spouse and cross-spouse effects should be considered and clarified.

Overview of the Present Study

Our first aim was to establish the presence of a higher-order factor of internalizing symptoms in a community sample of couples. Accordingly, we factor analyzed items of the *Beck Depression Inventory – II* (BDI-II; Beck, Steer, & Brown, 1996) and the *Beck Anxiety Inventory* (BAI; Beck & Steer, 1990). This aim expands upon previous research demonstrating both a higher-order factor shared among symptoms and specific dimensions of depressive and anxiety symptoms (Clark, Steer, & Beck, 1994; Steer, Clark, & Beck, 1995). Researchers have demonstrated this factor structure in a sample of undergraduate students (Clark et al.) and in a clinical sample of outpatients (Steer et al.). We sought to replicate this factor structure in a community sample and with couples rather than individuals. More importantly, we sought to create composite scores of internalizing symptoms to examine the developmental trajectories of these symptoms longitudinally (over the first 7 years of marriage). To our knowledge, no one has published such trajectories to date. Consistent with research focused exclusively on depressive symptoms (Davila et al., 2003), we hypothesized that symptoms would fluctuate (versus systematically increasing or decreasing) over time.

The second aim was to examine whether marital discord is a *risk factor* for the general dimension of internalizing symptoms. Consistent with results of prospective *two*-wave

designs indicating that marital discord predicts subsequent *depressive* symptoms (e.g., Beach et al, 2003), we predicted that lower levels of marital satisfaction during the transition into marriage would predict higher levels of internalizing symptoms across the first 7 years of marriage. The third aim was to examine the relative contributions of global marital dissatisfaction and specific relationship processes to the development of internalizing symptoms. Consistent with the *marital discord model of depression* (Beach et al., 1990) -- which suggests that relationship processes account for the link between marital discord and depressive symptoms -- we hypothesized that relationship processes would be significant predictors of symptoms when controlling for the effects of marital dissatisfaction.

Method

Participants and Procedures

All procedures were approved by the university IRB. Participants were recruited through marriage license records in Linn and Johnson Counties of Iowa. Couples in which both spouses were at least 18 years of age were mailed letters inviting them to participate. Of the 1,698 letters that were sent, 358 (21%) were answered by couples who expressed interest by sending an e-mail, leaving a telephone message, or returning the stamped postcard we included with the letter. Interested couples were screened over the telephone to ensure that they were married less than 6 months, in their first marriages, and that both partners were willing to participate. The first 105 couples who completed the screening procedures, were deemed eligible, and were able to schedule their initial laboratory appointments were included in the sample. Of the 105 couples who participated, one couple's data were deleted because it was revealed that it was not the wife's first marriage. Data from the husband of another couple were removed because his responses were deemed unusable and unreliable. One couple was dropped from the analyses because they did not complete the measure of marital satisfaction during the first wave of data collection. Thus, analyses were conducted with a final sample of 102 couples. Couples dated an average of 44 months (*SD* = 27) prior to marriage, 76% cohabited premaritally, and 15% were ethnic minorities. (The proportion of non-Caucasians in Iowa is 7%; U.S. Census, 2005). Modal annual joint income ranged from $40,001- $50,000. Husbands' average age was 25.82 (*SD* = 3.55), and wives' was 24.78 (*SD* = 3.67). Modal years of education were 14 for both spouses. At the start of the study, 58% of couples reported that they had participated in either a marital preparation program or couples therapy. The majority of the sample (97%) included couples in which at least one spouse was employed.

Eligible couples completed Informed Consent Documents at Times 1 and 6. (Time 1 ICDs covered Times 1-5). They also completed questionnaires through the mail (as well as completing other procedures beyond the scope of this study) six times during the first 7 years of marriage: 3-6 months (Time 1), 12-15 months (Time 2), 21-24 months (Time 3), 30-33 months (Time 4), 54-57 months (Time 5), and 75-77 months (Time 6) after the wedding. At Time 1, couples also attended a laboratory appointment during which they were administered the Relationship Quality Interview (RQI; Lawrence et al., 2008; 2009; 2011) to assess relationship processes. Couples were paid $25 to $100 at each time point, depending on the number of participation hours requested. By Time 6, 12 couples had permanently separated or divorced and 5 couples had withdrawn from the study (a 95% retention rate); available data from these couples were included in the present study.

Measures

Questionnaires—*The Beck Anxiety Inventory* (*BAI;* Beck & Steer, 1990) is a widely used measure of anxiety symptoms. Participants respond to 21 items with a 0 (not at all) to 3 (I could barely stand it) scale, with higher scores indicative of greater symptoms. *The Beck*

Depression Inventory – II (*BDI-II;* Beck et al., 1996) is one of the most widely used self-report measures of depressive symptoms. Participants respond to each of 21 items on a scale ranging from 0 (e.g., "I do not feel worthless") to 3 (e.g., "I feel utterly worthless"). Higher scores indicate greater symptoms. The *Quality of Marriage Index* (*QMI;* Norton, 1983) is a 6-item self-report questionnaire designed to assess the "essential goodness of a relationship." Participants indicate the extent to which they agree or disagree with 5 items using a scale from 1 (very strong disagreement) to 7 (very strong agreement), and rate their global marital "happiness" on a scale from 1 (very unhappy) to 10 (perfectly happy). Scores were summed to create a composite score of global marital satisfaction. Alpha coefficients ranged from .91 to .97.

Semi-structured interview—*The Relationship Quality Interview* (*RQI;* Lawrence et al., 2008; 2009; 2011). Relationship processes were measured with a 60-minute semi-structured interview designed to allow interviewers to conduct functional analyses of couples' relationships across a variety of relationship processes. Spouses are interviewed separately and simultaneously. Open-ended questions—followed by closed-ended questions—are asked to allow novel contextual information to be obtained. Concrete behavioral indicators are obtained to facilitate more objective ratings than might be obtained based on spouses' perceptions alone. Interviewer ratings are also obtained to eliminate the possibility that associations between poor functioning in a key domain and other factors (e.g., depression) are due to reporting biases. Interviewers independently rate each domain on scales from 1 (poor functioning) to 9 (high functioning), which are specific to each domain. See Appendix for examples of ratings for each domain.

The RQI was administered at a mean of 3 months of marriage and assesses functioning over the "past 6 months;" therefore, in the present study, the RQI captured relationship processes during the transition into marriage. Interviewer ratings based on interviews with husbands versus wives did not differ significantly from one another; thus, they were averaged to create composite scores of functioning at the couple level (as opposed to the individual level). The RQI demonstrates strong reliability, convergent validity, and divergent validity (Lawrence et al., 2008; 2009; 2011). All interviews were audio-taped, and inter-rater reliability was assessed using a random sample of scores from 20% of the interviews. Intraclass correlations ranged from .71-.94.

Data Analyses

To examine a higher-order structure of internalizing symptoms, we used a method consistent with procedures outlined by Clark et al. (1994) and Steer et al. (1995). A principal axis factor analysis (FA) was conducted with a Schmid-Leiman transformation using the 42 items of the BAI and BDI-2. Separate FAs were conducted with data collected at Times 1, 2, 3, 5, and 6. (The BAI was not administered at Time 4.) Before conducting these analyses, several preliminary steps were taken. First, to account for possible interdependence between spouses of a dyad, item-level correlations were examined (e.g., husbands' BAI item 1 correlated with wives' BAI item 1). Second, parallel factor analyses (O'Connor, 2000) were conducted to determine the maximum number of factors to be extracted for each FA at each time point.

For all other analyses, growth curve modeling techniques (GCM; Raudenbush & Bryk, 2002) were used.[1] GCM allows for a two-stage process in data analysis. The first stage (Level 1) estimates a trajectory of change (growth curve) for a variable that is described by two parameters: intercept and slope. Time was measured in months from the midpoint between Times 1 and 6 in order to model the intercept as overall levels of symptoms across time. The second stage of GCM (Level 2) allows for the examination of between-subjects

differences in associations between time-invariant covariates and outcomes; that is, individual or couple-level characteristics can be examined as predictors of the intercepts and slopes. At Level 2, Level 1 coefficients were modeled as a function of time-invariant predictors (i.e., marital satisfaction and specific relationship processes at Time 1).The possibility of interdependence between husbands' and wives' data was incorporated into our analyses in four ways. First, when dyad members are distinguishable, as in our sample of heterosexual married couples, there are potentially two actor effects and two partner effects; all four paths were included in analyses. Second, correlations between husbands' and wives' predictors were estimated in all equations. Third, the residual non-independence in outcomes was represented by the correlation between the error terms in husbands' and wives' outcomes. Fourth, if chi-square tests assessing the homogeneity of husbands' versus wives' Level 1 variance were significant for baseline models, residual terms were entered as simultaneous outcomes of all relevant predictors in subsequent models.

Results

Means and standard deviations were computed for relationship processes and husbands' and wives' global marital satisfaction and are reported at the bottom of Table 1. Husbands' and wives' satisfaction scores were not significantly different at Time 1 ($t(101) = 1.60$, *ns*; 95% CI [-.14, 1.34]; husbands, $M = 41.29$, $SD = 4.65$; wives, $M = 40.69$, $SD = 4.87$). On average, and as expected at the onset of marriage, scores for relationship processes at Time 1 (analyzed at the couple level; possible range = 1-9) indicate that relationship quality was relatively high, but not as high as one might expect among couples married for only 3 months: conflict, $M = 6.47$, $SD = 1.24$; support, $M = 6.91$, $SD = 0.79$; intimacy, $M = 7.27$, $SD = 0.77$; power and control, $M = 6.92$, $SD = 0.83$).

Identifying First- and Second-Order Dimensions of the BAI and BDI-II

Less than 1% of inter-spouse item correlations were greater than .30; thus, based on recommendations made by Kenny (1995), husbands' and wives' data were combined and analyzed simultaneously ($N = 206$). First-order principal axis FAs were conducted for each of the 5 waves of data and oblique (promax) rotated factor solutions were obtained. Based on results of parallel analyses, two factors were extracted at each time point.[2] Correlations between the two first-order factors ranged from .42-.53 across the 5 waves of data, suggesting the presence of a higher-order factor. Thus, *second*-order principal axis FAs were conducted to obtain a single higher-order factor of internalizing symptoms. Eigenvalues, variances, and factor loadings were all comparable to results obtained by Clark et al. (1994) and Steer et al. (1995). Schmid-Leiman solutions were obtained (Wolff & Preising, 2005) to orthogonalize factor patterns so that the first-order factors (anxiety and depression) represent *unique* dimensions that are independent from the general (shared) internalizing dimension. Congruence coefficients (Gorsuch, 1983) were examined from each pair of factor loadings (e.g., loadings for the higher-order factor at Times 1 and 2). Coefficients ranged from .94-.

[1]This data analytic approach was chosen because it is particularly well-suited to examining longitudinal and dyadic data (Karney & Bradbury, 1995b). HLM 6.0 was used because it provides reliable estimates of within-subject parameters in relatively small samples (Davila, Karney, Hall, & Bradbury, 2003). We used a multivariate 2-level model in which husband and wife parameters are modeled simultaneously—as originally proposed by Raudenbush, Brennan, and Barnett (1995)—in order to examine associations between marriage and symptoms separately for husbands and wives. This model is closely related to an actor-partner interdependence model, allowing us to model within-spouse and cross-spouse effects.

[2]Parallel analyses indicated that a maximum number of 3 factors could be extracted at Times 1 and 2 and that a maximum of 4 factors could be extracted at Times 3, 5, and 6 (Time 4 data were not analyzed); however, the 3rd and 4th factors were not readily interpretable. Consistent with theory and methods outlined by Clark et al. (1994) and Steer et al. (1995), we sought to identify an initial factor solution that distinguished between anxiety and depressive symptoms. Whereas items loading on the 1st factor consisted of anxiety symptoms and items loading to the 2nd factor consisted of depression symptoms, the 3rd and 4th factors included *both* anxiety and depression symptoms. Moreover, the 3rd and 4th factors were not distinct from the first 2 factors extracted. Rather, there was substantial factor complexity for factors 3 and 4 (items loading on the 3rd and 4th factors also loaded to the 1st two factors).

97, demonstrating factorial invariance over time. An item was retained for a factor if: (a) it had a factor loading of .30 or greater at 4 of the 5 time points or (b) the mean factor loading (averaging across time) was .30 or greater. With a few exceptions, items from the BAI loaded to the unique anxiety factor, items from the BDI-II loaded to the unique depression factor, and items from both measures loaded to the second-order internalizing factor.

Descriptives for Internalizing Symptoms and Bivariate Correlations among Measures

The 37 items loading on the higher-order internalizing factor were summed to create composite scores of internalizing symptoms. Coefficient alphas ranged from .89 to .92 for husbands and from .88 to .93 for wives across the 5 waves of data. Mean levels of husbands' internalizing symptoms (possible range: 0-111) were M = 9.99 (SD = 9.98) at Time 1, M = 9.17 (SD = 9.23) at Time 2, M = 9.98 (SD = 8.83) at Time 3, M = 7.71 (SD = 9.08) at Time 5, and M = 7.77 (SD = 7.39) at Time 6. Mean levels of wives' symptoms were M = 12.30 (SD = 9.07) at Time 1, M = 13.79 (SD = 12.23) at Time 2, M = 14.01 (SD = 12.72) at Time 3, M = 10.92 (SD = 10.43) at Time 5, and M = 11.43 (SD = 10.86) at Time 6. Averaged across time, wives reported significantly more internalizing symptoms than husbands (t(101) = 3.11, $p < .005$; 95% CI [1.25, 5.66]; husbands, M = 9.33, SD = 8.17; wives, M = 12.78, SD = 8.74).

Symptom trajectories—To test our hypothesis that, on average, symptoms would fluctuate over time, we employed a mean-and-variance model of internalizing symptoms:

$$\textbf{Level}\quad 1{:}Y_{ij}\quad(\text{Internalizing Symptoms})=\beta_{1j}\quad(\text{Husband})+\beta_{2j}\quad(\text{Wife})+r_{ij},$$

where Y_{ij} represents symptoms for individual j at Time i: β_{1j} represents the intercept of husband j (i.e., the overall level of symptoms); β_{2j} represents the intercept of wife j (i.e., the overall level of symptoms); and r_{ij} represents the residual variance in repeated measures for individual j, which is assumed to be independent and normally distributed. In GCM, the coefficients can be understood as functionally similar to unstandardized regression coefficients, and they represent the degree of association between two variables. In these Level 1 equations, each parameter includes a constant and a unique error term such that:

$$\textbf{Level}\quad 2{:}\beta_{1j}=\gamma_{10}+\mu_{1j}\quad \textit{and}\quad \beta_{2j}=\gamma_{20}+\mu_{2j}.$$

Coefficients were modeled as random; that is, a random error parameter (μ) was estimated for each coefficient. There was significant between-subject variability in husband (χ^2 (101) = 387.35, $p < .001$) and wife (χ^2 (101) = 596.87, $p < .001$) Level 1 parameters.

We also tested a linear model to account for the possibility that internalizing symptoms increase or decrease systematically over time by adding husband and wife *time* parameters:

$$\textbf{Level}\quad 1{:}Y_{ij}\quad(\text{Symptoms})=\beta_{1j}\quad(\text{Husband})+\beta_{2j}\quad(\text{Wife})+\beta_{3j}\quad(\text{Husband Time})+\beta_{4j}\quad(\text{Wife Time})+r_{ij}$$

$$\textbf{Level}\quad 2{:}\beta_{1j}=\gamma_{10}+\mu_{1j}$$

$$\beta_{2j}=\gamma_{20}+\mu_{2j}$$

$$\beta_{3j}=\gamma_{30}+\mu_{3j}$$

$$\beta_{4j}=\gamma_{40}+\mu_{4j}$$

On average, internalizing symptoms decreased over time for husbands, $t(101) = -2.13$, $p < .05$; however, there was not significant between-subject variability among husbands' slopes, $\chi^2(91) = 106.40$, *ns*. Internalizing symptoms did not change systematically over time for wives, $t(101) = -1.52$, *ns*; however, there was significant between-subject variability among wives' slopes, $\chi^2(91) = 118.31$, $p < .05$. Reliability estimates measuring the amount of true variance accounted for in each parameter were low for husband (.18) and wife (.21) time parameters, suggesting a diminished ability to detect significant predictors of these parameters. Due to poor reliability estimates for both husband and wife slope parameters, the nonsignificant variance of the husband slope parameter, and prior research and theory suggesting that symptoms wax and wane over time (e.g., Davila et al., 2003), we chose to adopt the more parsimonious and theoretically meaningful mean-and-variance model. A test of the homogeneity of Level-1 variance across husband and wife parameters for the mean-and-variance model was significant, $\chi^2 (91) = 387.86$, $p < .001$; therefore, residual terms were entered as simultaneous outcomes of all relevant predictors in subsequent models.

Correlations among measures—Bivariate correlations among husbands' and wives' internalizing symptoms (averaged across time), marital satisfaction at Time 1, and the four relationship processes at Time 1 are reported in Table 1. The inter-spousal correlation between husband and wife internalizing symptoms was small ($r = .10$) whereas, consistent with the literature on newlywed couples (e.g., Karney & Bradbury, 1995a), levels of marital satisfaction between spouses were highly correlated ($r = .68$). Predictors (marital satisfaction and four relationship processes at Time 1) and outcomes (average internalizing symptoms) were sufficiently distinct from each other to warrant examining them as separate (albeit related) constructs. Correlations between specific relationship processes and marital satisfaction suggested that, although global marital satisfaction is significantly associated with specific relationship processes, these are still distinct constructs with potentially unique contributions to internalizing symptoms (*r*s ranged from .40-.48).

Marital Discord as a Risk Factor for Internalizing Symptoms

To examine whether global marital satisfaction at the onset of marriage predicts symptoms over the first 7 years of marriage, time-invariant covariates (husbands' and wives' Time 1 marital satisfaction) were grand-mean centered at Level 2 as predictors of Level 1 husband and wife parameters:

$$\textbf{Level 1:}\ Y_{ij}\ (\text{Internalizing Symptoms}) = \beta_{1j}\ (\text{Husband Intercept}) + \beta_{2j}\ (\text{Wife Intercept}) + r_{ij}$$

$$\begin{aligned}\textbf{Level 2:}\ \beta_{1j} &= \gamma_{10}+\gamma_{11}\ (\text{Husband Time 1 Satisfaction}) + \gamma_{12}\ (\text{Wife Time 1 Satisfaction}) + u_{1j}\\ \beta_{2j} &= \gamma_{20}+\gamma_{21}\ (\text{Husband Time 1 Satisfaction}) + \gamma_{22}\ (\text{Wife Time 1 Satisfaction}) + u_{2j}\end{aligned}$$

As presented in Table 2, husbands' satisfaction was significantly associated with their own internalizing symptoms, $t(99) = -2.99$, $p < .005$, but not with their wives' symptoms, $t(99) = -1.77$, *ns*. Wives' satisfaction was *not* significantly associated with their own symptoms, $t(99) = -0.68$, *ns*, nor with their husbands' symptoms, $t(99) = 0.42$, *ns*. To the extent that

husbands (but not wives) were less satisfied at the beginning of their marriages, they also experienced more internalizing symptoms across the first 7 years of marriage.

Global Satisfaction versus Specific Relationship Processes

To examine the relative contributions of global marital satisfaction (QMI) and specific relationship processes at the onset of marriage to levels of internalizing symptoms over the first 7 years of marriage, time-invariant covariates were grand-mean centered at Level 2 as predictors of Level 1 husband and wife parameters:

$$\textbf{Level}\ 1{:}\ Y_{ij}\ (\text{Internalizing Symptoms}) = \beta_{1j}\ (\text{Husband Intercept}) + \beta_{2j}\ (\text{Wife Intercept}) + r_{ij}$$

$$\begin{aligned}\textbf{Level}\ 2{:}\quad \beta_{1j} &= \gamma_{10} + \gamma_{11}\,(\text{H}\quad \text{QMI}) + \gamma_{12}\,(\text{W}\quad \text{QMI}) + \gamma_{13}\,(\text{Conflict}) + \gamma_{14}\,(\text{Support}) + \gamma_{15}\,(\text{Intimacy}) + \gamma_{16}\,(\text{Control}) + u_{1j}\\ \beta_{2j} &= \gamma_{20} + \gamma_{21}\,(\text{H}\quad \text{QMI}) + \gamma_{22}\,(\text{W}\quad \text{QMI}) + \gamma_{23}\,(\text{Conflict}) + \gamma_{24}\,(\text{Support}) + \gamma_{25}\,(\text{Intimacy}) + \gamma_{26}\,(\text{Control}) + u_{2j}\end{aligned}$$

As presented in Table 3, husbands' satisfaction ($t(95) = -2.62$, $p < .05$) and power and control ($t(95) = -2.09$, $p < .05$) were significantly associated with husbands' symptoms. To the extent that husbands were more satisfied with their marriages and there was greater symmetry of power and control across spouses at the beginning of the marriage, husbands experienced fewer symptoms during the first 7 years of marriage. For wives, emotional intimacy was associated with wives' symptoms, $t(95) = -2.74$, $p < .01$. To the extent that couples were more emotionally intimate at the onset of marriage, wives experienced fewer symptoms over time.[3]

Sensitivity Analyses

A series of sensitivity analyses were conducted to ensure that results were not biased by (a) violations of model assumptions or (b) missing data due to divorce. Residual analyses indicated that there was some degree of non-normality of residuals and heteroskedasticity of variances. As a result, all analyses were repeated using natural logarithm transformed scores of internalizing symptoms. The general pattern of results reported above was replicated, suggesting that mild violations of assumptions did not bias the results. Nonetheless, robust SEs have been reported for all model parameters. To address missing data due to divorce, pattern-mixture models for non-ignorable missing data were conducted (Atkins, 2005; Little, 1995). Results of these analyses indicated that the effects of relationship variables on internalizing symptoms did not vary as a function of missing data due to divorce.

Discussion

The principal goal of the present study was to attain a more comprehensive and refined understanding of the role that marriage plays in mental health. We sought to achieve this goal by (a) clarifying whether marital discord is a *global* risk factor for the broad class of internalizing disorders, (b) examining the relative contributions of marital dissatisfaction and specific relationship processes during the transition into marriage to the subsequent development of internalizing symptoms, and (c) implementing a series of methodological refinements (i.e., multi-wave longitudinal design, examination of cross-spouse paths, assessment of subthreshold symptoms).

[3]We also examined the univariate effects of each relationship process on symptoms (through a series of separate analyses). Each relationship process significantly predicted husband (*t*s ranged from -4.18 to -2.32) and wife symptoms (*t*s ranged from -4.46 to -2.85) with one exception: conflict was only marginally associated with wives' symptoms ($t = -1.695$, $p = .10$).

Summary and Interpretation of Results

Results of Aim 1 provide evidence of a higher-order factor shared among depressive and anxiety symptoms—a general internalizing dimension—in a community sample of couples. The factor structure obtained from Aim 1 provided a psychometrically sound assessment scheme for creating composite scores of internalizing symptoms. Additionally, expanding upon previous research demonstrating the fluctuation of *depressive* symptoms over time (e.g., Davila et al., 2003; Karney, 2001), growth curve analyses suggested that internalizing symptoms wax and wane over the early years of marriage.

Results of Aim 2 indicated that marital dissatisfaction during the transition into marriage is a risk factor for subsequent internalizing symptoms over the first 7 years of marriage for husbands but not for wives. This finding is in contrast to research and theory suggesting that marital discord may be a greater risk factor for *depression* for wives than for husbands (e.g., Davila et al., 2003; Whisman et al., 2006). There are two possible explanations for this surprising finding. First, perhaps the importance of marriage for husbands versus wives varies during different life transitions. Based on the results of the present study, global marital satisfaction during the transition into marriage appears critical to men's subsequent mental health; however, the impact of satisfaction on wives' mental health may become more salient at a different transitional point (e.g., during the transition into parenthood when women are at risk for post-partum depression). Second, one of the novel contributions of this study is the examination of a higher-order internalizing dimension. Perhaps for wives, marital satisfaction is not a risk factor for internalizing symptoms in general but rather represents a specific risk for the development of depressive symptoms (a lower-order dimension of the internalizing spectrum). This interpretation is consistent with prior research indicating that marital satisfaction is more strongly associated with *depressive* symptoms for wives than for husbands.

Results of Aim 3 suggest that the extent to which marriages are characterized by disrespect, power asymmetry and partner control at the onset of marriage is just as detrimental to husbands' mental health as is global marital dissatisfaction. Disrespectful behaviors (e.g., being belittled by one's wife, not being treated as an equal partner in the marriage) may contribute to low self-esteem and feelings of worthlessness, which are key features of depression. Spousal control may be manifested in two ways. First, it may be in the form of husbands being the "head of the household" such that they have the majority of the responsibilities in the relationship, leading them to feel anxious and overwhelmed. Alternatively, issues of power and control may be characterized in the opposite manner, with husbands having little say over what happens in their relationships and little control over how they spend their time, how the household is run, or how money is spent which, in turn, may lead to feelings of helplessness or hopelessness and isolation. Indeed, in the present study, exactly half of couples with imbalance of power and control in the relationship included husbands with more control whereas the other half included wives with more control. Behavioral theories suggest that losing touch with naturally reinforcing activities in one's environment is a major contributing factor in depression (Dimidjian, Martell, Addis, & Herman-Dunn, 2008). Thus, it is not surprising that a lack of freedom to engage in individual interests and pursue personal goals—as the result of having excessive responsibilities or little personal freedom— may lead husbands to experience symptoms of depression.

For wives, a lack of closeness, warmth, affection, and interdependence in one's relationship (emotional intimacy) at the onset of marriage was a risk factor for subsequent internalizing symptoms. Researchers have speculated that *close* relationships are especially central to the identities of women (Culp & Beach, 1998); thus, it is not surprising that a lack of intimacy and closeness in one's marital relationship—the most central of all close relationships—is

associated with greater symptoms during the first 7 years of marriage. Nevertheless, the question remains: Why was emotional intimacy associated with symptoms but global marital satisfaction was not? One possible explanation is that, at least for wives, global satisfaction and specific relationship processes differ with regard to the *immediacy of their effects* on mental health. That is, perhaps global satisfaction has more immediate yet short-term effects on symptoms whereas relationship processes have delayed yet lasting effects. For example, previous research has only demonstrated that marital discord is linked to subsequent depressive symptoms up to *two years* later (Whisman & Uebelacker, 2009); however, in the present study, symptoms were assessed over *seven years*. When examining this considerably longer period of time, marital satisfaction did not emerge as a long-term predictor of wives' symptoms despite the *concurrent* association between satisfaction and symptoms at Time 1 (r = -.25, p < .05). In sum, marital dissatisfaction appears to have an acute effect on wives' symptoms whereas low levels of emotional intimacy play a more chronic, perhaps insidious role in women's mental health.

Implications of the Present Study

Before we turn to study implications, we note various methodological limitations. First, although the sample size was comparable to many studies of newlyweds (e.g., N = 90 couples; Kiecolt-Glaser et al., 1996), replication with a larger sample is recommended. Second, the sample consisted primarily of White, well-educated, heterosexual married couples; such demographic factors limit the generalizability of our findings. Third, the study was not experimental; thus, causal conclusions cannot be drawn. Fourth, although couples were in the early years of marriage, they were not necessarily in new relationships at the start of the study. Fifth, couples generally reported satisfaction with their marriages at Time 1, more adaptive relationship processes, and relatively low levels of symptoms. Indeed, we chose a community sample at the transition to marriage for the express purpose of yielding such levels, as they are highly generalizable and ideal for informing prediction and prevention efforts. Nevertheless, associations between marital discord and symptoms may differ in clinical samples. Finally, although response rates were comparable to other published studies (e.g., Kurdek, 2005), it is possible that couples at greatest risk for marital discord and dissolution were less likely to respond to the recruitment efforts and, consequently, were excluded from the sample.

There are numerous empirical, clinical, and theoretical implications of the research presented in this article. To begin, a dimensional approach to examining psychopathology is largely preferred to a categorical approach, and research indicates that depression and anxiety belong to a higher-order class of internalizing symptoms (e.g., Watson, 2005). The results of Aim 1 demonstrate the presence of this higher-order factor in a community sample, in men and women, and longitudinally. To maximize construct validity, researchers should routinely examine composite scores of internalizing symptoms rather than conducting separate examinations of depressive and anxiety symptoms or limiting their examinations to diagnoses.

Results of the present study also highlight the importance of examining the specific aspects of the marital relationship that have the greatest impact on psychological symptoms – as opposed to simply examining global relationship satisfaction. First, if we had overlooked relationship processes, we might have concluded that relationship functioning at the onset of marriage only affects men's mental health over the first 7 years of marriage (results of Aim 2). However, examining specific processes in Aim 3 revealed that marital functioning does affect women's long-term mental health and, more specifically, that high levels of intimacy, trust and emotional closeness are critical. Second, results demonstrate the utility of examining the impact of *multiple* relationship processes on psychopathology rather than

focusing on only one or two aspects of the relationship (e.g., conflict). Past research has demonstrated that each of the four relationship processes under investigation is associated with depression (and, in some cases, with anxiety) when examined separately. Further, supplementary univariate analyses conducted in the present study demonstrated significant associations between each relationship process and internalizing symptoms for both husbands and wives. Though informative, univariate analyses limit specificity of findings. By examining relationship processes simultaneously, we were able to identify the aspects of the marital relationship that are *most* critical to mental health.

The present study also helps to explain sex differences in the role that marriage plays in mental health. Depression is more prevalent in women than in men, and researchers have speculated that marriage plays a greater role in women's mental health as they tend to be more interpersonally oriented (Whisman et al., 2006). The results of the present study support the notion that sex differences do exist in the marital discord-internalizing disorders link, but challenge current conceptualizations of the nature of these sex differences. For example, global marital dissatisfaction *at the onset of marriage* appears to be a risk factor for husbands but not for wives. Specifically, marital dissatisfaction seems to have an acute and temporary effect on wives' symptoms, and a more insidious and persistent impact on husbands' symptoms (over the first 7 years of marriage).

A more notable finding regarding sex differences is that the *specific aspects* of the marital relationship most influential to mental health differ for husbands and wives. Asymmetry in power and control is a risk factor for men (regardless of the direction of the asymmetry) whereas low levels of emotional intimacy represent a risk factor for women. This finding challenges the assumption that one's marital relationship is more important to wives than husbands and, consequently, that wives benefit more from marriage with regard to their mental health. Rather, marital relationships are important to the mental health of both men and women, but in different ways. We call for researchers to conduct more sophisticated research focused on specific relationship processes to further clarify the nature of these sex differences.

With regard to clinical implications, relationship processes can be directly targeted in interventions, whereas global satisfaction must be indirectly targeted by enhancing marital functioning; therefore, results of the present study have tremendous clinical utility. We were able to identify specific clinical targets for interventions aimed at preventing internalizing disorders. For wives, it may be sufficient to focus on enhancing emotional intimacy to prevent the development of symptoms. For husbands, maximizing global satisfaction may be important, but helping couples build relationships characterized by mutual respect and a balance of control and decision-making appears to be an optimal starting point.

Finally, the current study has important theoretical implications. One of the most widely applied frameworks of mental illness—*the diathesis-stress model* (Ingram & Luxton, 2004) — does not recognize the unique role of the marital relationship in the developmental course of psychopathology. Results of the present study indicate that incorporating relationship factors such as power and control and emotional intimacy into this model may greatly enhance its explanatory power. Understanding how marital processes fit into a diathesis-stress framework is particularly important given that enduring vulnerabilities are stable and environmental stressors are largely uncontrollable whereas relationship processes can be -- and have been -- successfully targeted in interventions (e.g., behavioral marital therapy for depression; Beach et al., 1998). Accordingly, we call for researchers to examine how marital processes interact with diatheses and stressors that originate outside of the marital relationship to influence the developmental course of internalizing disorders. To the extent

that relationship processes are more routinely incorporated into existing etiological theories, these theories—and the interventions that they inform—are likely to be far more effective.

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APPENDIX

ABBREVIATED EXAMPLES OF RATING SCALES OF THE RELATIONSHIP QUALITY INTERVIEW (RQI; Lawrence et al., 2008; 2009; 2011)

Quality of Emotional Intimacy in the Relationship

1 Extreme emotional distance; partner cannot be trusted. All difficult topics are avoided. Self-disclosure is punished. Partner does not disclose to participant. Very little love or affection. Total lack of intimacy.

5 Some closeness emotionally. Some trust in partner, depending on the situation. Certain topics are avoided. Partner discloses somewhat and shows some love/affection. Level of intimacy is moderate.

9 Extreme closeness. High level of trust/intimacy. Self-disclosure is rewarded. Both partners are able to confide in the other about any topic. Extremely high levels of intimacy in all aspects of the relationship.

Quality of Support Transactions in the Relationship

1 Partner provides no support or provides limited support but it is not what the participant wants. Partner almost always dismisses or ignores requests for support (or time alone) or responds with criticism.

5 There is some mismatch between type of support provided and type of support desired (about half of the time). Participant is indifferent on this topic.

9 High quality of support. Partner is excellent at providing support and always responds well to requests.

Quality of Couple's Ability to Share Power in the Relationship

1 Participant is not treated as a competent person or equal partner. Extreme disrespect in the relationship. One partner has almost all of the power, including over the other partner's daily life.

5 One or both partners is occasionally disrespected and sometimes feels unaccepted (about half of the time). Some shared power over decision-making. Some specific power issues or some lack of personal freedom.

9 Partners treat each other as competent individuals and equal partners. Tremendous respect and each partner has power over own daily life. Partners are comfortable with the division in decision making power.

Quality of Conflict/Problem-Solving Interactions in the Relationship

1 Frequent major arguments (e.g. several times/week). Almost all disagreements escalate into major arguments. Conflict regularly includes verbal and/or physical aggression along with a multitude of negative emotions. Poor conflict management skills. Argument may end but issue is not resolved.

5 Occasional major arguments (e.g. 1/ month). Regular minor arguments (e.g. weekly). Major arguments include occasional verbal aggression. Conflict resolution is lengthy, but issues are resolved in some way.

9 Absolutely no major arguments. No aggression. Very rare minor disagreements (bickering). Good conflict management skills. Disagreements are resolved with communication and do not escalate into arguments.

References

Atkins DC. Using multilevel models to analyze couple and family treatment data: Basic and advanced issues. Journal of Family Psychology. 2005; 19:98–110. doi:10.1037/0893-3200.19.1.98. [PubMed: 15796656]

Barlow DH. Unraveling the mysteries of anxiety and its disorders from the perspective of emotion theory. American Psychologist. 2000; 55:1247–1263. doi:10.1037/0003-066X.55.11.1247. [PubMed: 11280938]

Barry R, Bunde M, Brock RL, Lawrence E. Validity and utility of a multidimensional model of received support in intimate relationships. Journal of Family Psychology. 2009; 23:48–57. doi: 10.1037/a0014174. [PubMed: 19203159]

Beach, S. Affective disorders.. In: Sprenkle, DH., editor. Effectiveness research in marriage and family therapy. The American Association for Marriage and Family Therapy; Alexandria, VA: 2002. p. 289-309.

Beach, SR.; Fincham, FD. Marital processes and depression: Implications for clinical intervention.. In: L'Abate, L., editor. Family psychopathology: The relational roots of dysfunctional behavior. Guilford Press; New York, NY: 1998. p. 256-279.

Beach SRH, Fincham FD, Katz J. Marital therapy in the treatment of depression: Toward a third generation of therapy and research. Clinical Psychology Review. 1998; 18:635–661. doi:10.1016/S0272-7358(98)00023-3. [PubMed: 9779327]

Beach SRH, O'Leary KD. Marital discord and dysphoria: For whom does the marital relationship predict depressive symptoms? Journal of Social and Personal Relationships. 1993; 10:405–420. doi: 10.1177/0265407593103007.

Beach SRH, Katz J, Kim S, Brody GH. Prospective effects of marital satisfaction on depressive symptoms in established marriages: A dyadic model. Journal of Social and Personal Relationships. 2003; 20:355–371. doi:10.1177/0265407503020003005.

Beach, SRH.; Sandeen, EE.; O'Leary, KD. Depression in marriage. Guilford; NY: 1990.

Beck, AT.; Steer, RA. Manual for the Beck Anxiety Inventory. Psych. Corp.; TX: 1990.

Beck, AT.; Steer, RA.; Brown, GK. Manual for Beck Depression Inventory-II. Psychological Corporation; San Antonio, TX: 1996.

Brock RL, Lawrence E. Too much of a good thing: Underprovision versus overprovision of partner support. Journal of Family Psychology. 2009; 23:181–192. doi:10.1037/a0015402. [PubMed: 19364212]

Brown GW, Andrews B, Harris T, Adler Z, Bridge L. Social support, self-esteem and depression. Psychological Medicine. 1986; 16:813–831. doi:10.1017/S0033291700011831. [PubMed: 3823299]

Byrne M, Carr A. Depression and power in marriage. Journal of Family Therapy. 2000; 22:408–427. doi:10.1111/1467-6427.00161.

Byrne M, Carr A, Clark M. Power in relationships of women with depression. Journal of Family Therapy. 2004; 26:407–429. doi:10.1111/j.1467-6427.2004.00291.x.

Cascardi M, O'Leary KD, Schlee KA. Co-occurrence and correlates of posttraumatic stress disorder and major depression in physically abused women. Journal of Family Violence. 1999; 14:227–249. doi:10.1023/A:1022827915757.

Clark DA, Steer RA, Beck AT. Common and specific dimensions of self-reported anxiety and depression: Implications for the cognitive and tripartite models. Journal of Abnormal Psychology. 1994; 103:645–654. doi:10.1037/0021-843X.103.4.645. [PubMed: 7822565]

Clark LA. Temperament as a unifying basis for personality and psychopathology. Journal of Abnormal Psychology. 2005; 114:505–521. doi:10.1037/0021-843X.114.4.505. [PubMed: 16351374]

Costello CG. Social factors associated with depression: A retrospective community study. Psychological Medicine. 1982; 12:329–339. doi:10.1017/S0033291700046663. [PubMed: 7100356]

Culp LN, Beach SRH. Marriage and depressive symptoms: The role and bases of self-esteem differs by gender. Psychology of Women Quarterly. 1998; 22:647–663. doi:10.1111/j.1471-6402.1998.tb00183.x.

Davila J, Karney BR, Hall TW, Bradbury TN. Depressive symptoms and marital satisfaction: Within-subject associations and the moderating effects of gender and neuroticism. Journal of Family Psychology. 2003; 17:557–570. doi:10.1037/0893-3200.17.4.557. [PubMed: 14640805]

Dehle C, Larsen D, Landers JE. Social support in marriage. doi:10.1080/01926180126500. American Journal of Family Therapy. 2001; 29:307–324.

Dimidjian, S.; Martell, CR.; Addis, ME.; Herman-Dunn, R. Behavioral activation for depression.. In: Barlow, D., editor. Clinical handbook of psychological disorders. 4th ed.. Guilford Press; New York, NY: 2008. p. 328-364.

Fincham FD, Beach SRH, Harold GT, Osborne LN. Marital satisfaction and depression: Different causal relationships for men and women? Psychological Science. 1997; 8:351–356. doi:10.1111/j.1467-9280.1997.tb00424.x.

Gottman JM, Levenson RW. The timing of divorce: predicting when a couple will divorce over a 14-year period. Journal of Marriage and Family. 2000; 62:737–745. doi:10.1111/j.1741-3737.2000.00737.x.

Gorsuch, R. Factor analysis. Lawrence Erlbaum & Associates; Hillsdale, NJ: 1983.

Hautzinger M, Linden N, Hoffman N. Distressed couples with and without a depressed partner: An analysis of their verbal interaction. Journal of Behavioral Therapy and Experimental Psychiatry. 1982; 13:307–314. doi:10.1016/0005-7916(82)90075-1.

Horwitz AV, McLaughlin J, White HR. How the negative and positive aspects of partner relationships affect the mental health of young married people. Journal of Health and Social Behavior. 1997; 39(2):124–136. [PubMed: 9642903]

Ingram, R.; Luxton, D. Vulnerability-stress models.. In: Hankin, B.; Abela, J., editors. Development of psychopathology: A vulnerability-stress perspective. Sage; Thousand Oaks, CA: 2005. p. 32-46.

Karney, BR. Depressive symptoms and marital satisfaction in the early years of marriage: The implications of a growth curve analysis.. In: Beach, SRH., editor. Marital and family processes in depression. APA; Washington, DC: 2001. p. 45-68.

Karney BR, Bradbury TN. The longitudinal course of marital quality and stability: A review of theory, methods, and research. Psychological Bulletin. 1995a; 118:3–34. doi:10.1037/0033-2909.118.1.3. [PubMed: 7644604]

Karney B, Bradbury T. Assessing longitudinal change in marriage: An introduction to the analysis of growth curves. Journal of Marriage and the Family. 1995b; 57:1091–1108. doi:10.2307/353425.

Kenny DA. The effect of nonindependence on significance testing in dyadic research. Personal Relationships. 1995; 2:67–75. doi:10.1111/j.1475-6811.1995.tb00078.x.

Kiecolt-Glaser JK, Newton T, Cacioppo JT, MacCallum RC, Glaser R, Malarkey WB. Marital conflict and endocrine function: are men really more physiologically affected than women? Journal of

Consulting and Clinical Psychology. 1996; 64:324–32. doi:10.1037/0022-006X.64.2.324. [PubMed: 8871417]

Kraemer HC, Stice E, Kazdin A, Offord D, Kupfer D. How do risk factors work together? Mediators, moderators, and independent, overlapping, and proxy risk factors. American Journal of Psychiatry. 2001; 158(6):848–856. [PubMed: 11384888]

Kreider, RM.; Fields, JM. Number, timing, and duration of marriages and divorces: Fall 1996. Current population reports. US Census Bureau; Washington, DC: 2001.

Krueger RF. The structure of common mental disorders. Archives of General Psychiatry. 1999; 56:921–926. doi:10.1017/S0033291710001662. [PubMed: 10530634]

Kurdek LA. Gender and marital satisfaction early in marriage: A growth curve approach. Journal of Marriage and Family. 2005; 67:68–84. doi:10.1111/j.0022-2445.2005.00006.x.

Lange A, van Dyck R. The function of agoraphobia in the marital relationship: a research note. Acta Psychiatrica Scandinavica. 1992; 85:89–93. doi:10.1111/j.1600-0447.1992.tb01449.x. [PubMed: 1546556]

Lawrence E, Barry RA, Brock RL, Bunde M, Langer A, Ro E, Fazio E, et al. Development of an interview assessing relationship quality: Preliminary support for reliability, convergent and divergent validity, and incremental utility. Psychological Assessment. 2011; 23:44–63. doi: 10.1037/a0021096. [PubMed: 21280953]

Lawrence, E.; Brock, RL.; Barry, RA.; Langer, A.; Bunde, M. Assessing relationship quality: Development of an interview and implications for couple assessment and intervention.. In: Cuyler, E., editor. Psychology of relationships. Nova Publishers, Inc.; NY: 2009. p. 173-189.

Lawrence E, Pederson A, Bunde M, Barry RA, Brock RL, Fazio E, Mulryan L, Hunt S, Madsen L, Dzankovic S. Objective ratings of relationship skills across multiple domains as predictors of marital satisfaction trajectories. Journal of Social and Personal Relationships. 2008; 25:445–466. doi:10.1177/0265407508090868. [PubMed: 19122752]

Leonard, KE.; Roberts, LJ. Marital aggression, quality, and stability in the first year of marriage: Findings from the buffalo newlywed study.. In: Bradbury, TN., editor. The developmental course of marital dysfunction. Cambridge University Press; Cambridge, NY: 1998. p. 44-73.

Little RJA. Modeling the drop-out mechanism in repeated-measures studies. Journal of the American Statistical Association. 1995; 980(431):1112–1121.

Lorenz FO, Conger RD, Montague RB, Wickrama KAS. Economic conditions, spouse support, and psychological distress of rural husbands and wives. Rural Sociology. 1993; 58:247–268. doi: 10.1111/j.1549-0831.1993.tb00493.x.

Markman, HJ.; Stanley, SM.; Blumberg, SL. Fighting for your marriage: Positive steps for preventing divorce and preserving a lasting love. Jossey-Bass; San Francisco, CA: 1994.

McLeod JD. Anxiety disorders and marital quality. Journal of Abnormal Psychology. 1994; 103:767–776. doi:10.1037/0021-843X.103.4.767. [PubMed: 7822579]

Mineka S, Watson D, Clark LA. Comorbidity of anxiety and unipolar mood disorders. Annual Review of Psychology. 1998; 49:377–412. doi:10.1146/annurev.psych.49.1.377.

Nathan, P.; Gorman, JM. A guide to treatments that work. 2nd ed.. Oxford University Press; Oxford, NY: 1998.

Norton R. Measuring marital quality: A critical look at the dependent variable. Journal of Marriage and the Family. 1983; 45(1):141–151.

O'Connor BP. SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. Behavior Research Methods, Instruments, and Computers. 2000; 32(3):396–402.

O'Hara MW. Social support, life events, and depression during pregnancy and the puerperium. Archives of General Psychiatry. 1986; 43(6):569–573. [PubMed: 3707289]

O'Leary, KD.; Cano, AM. Marital discord and partner abuse: Correlates and causes of depression. In: Beach, SRH., editor. Marital and family processes in depression. American Psychological Association; Washington, DC: 2001. p. 163-182.

Pistrang N, Barker C. The partner relationship in psychological response to breast cancer. Social Science and Medicine. 1995; 40:789–799. doi:10.1016/0277-9536(94)00136-H. [PubMed: 7747213]

Raudenbush SW, Brennan RT, Barnett RC. A multivariate hierarchical model for studying psychological change within married couples. Journal of Family Psychology. 1995; 9:161–174. doi:10.1037//0893-3200.9.2.161.

Raudenbush, SW.; Bryk, AS. Hierarchical linear modeling: Applications and data analysis methods. 2nd ed.. Sage Publications, Inc; Thousand Oaks, CA: 2002.

Rehman US, Gollan J, Mortimer AR. The marital context of depression: Research, limitations, and new directions. Clinical Psychology Review. 2007; 28:179–198. doi:10.1016/j.cpr.2007.04.007. [PubMed: 17573169]

Reiss D, Price RH. National research agenda for prevention research: The national institute of mental health report. American Psychologist. 1996; 51:1109–1115. doi:10.1037/0003-066X.51.11.1109. [PubMed: 8937258]

Schweitzer RD, Logan GP, Strassberg DS. The relationship between marital intimacy and postnatal depression. Australian Journal of Marriage and Family. 1992; 13:19–23.

Smolen RC, Spiegal DA, Martin CJ. Patterns of marital interaction associated with marital dissatisfaction and depression. Journal of Behaviour Therapy and Experimental Psychiatry. 1986; 17:261–266. doi:10.1016/0005-7916(86)90061-3.

Steer RA, Clark DA, Beck AT, Ranieri WF. Common and specific dimensions of self-reported anxiety and depression: A replication. Journal of Abnormal Psychology. 1995; 104:542–545. doi: 10.1037/0021-843X.104.3.542. [PubMed: 7673579]

Trull TJ, Durrett CA. Categorical and dimensional models of personality disorder. Annual Review of Clinical Psychology. 2005; 1:355–380. doi:10.1146/annurev.clinpsy.1.102803.144009.

U.S. Census. Number, timing, and duration of marriages and divorces: 2001. 2005. (P70-97)

Waring EM, Patton D. Marital intimacy and depression. British Journal of Psychiatry. 1984; 145:641–644. doi:10.1192/bjp.145.6.641. [PubMed: 6509274]

Waring EM, Patton D, Neron CA, Linker W. Types of marital intimacy and prevalence of emotional illness. Canadian Journal of Psychiatry. 1986; 31(8):720–725.

Watson D. Rethinking the mood and anxiety disorders: A quantitative hierarchical model for DSM-V. Journal of Abnormal Psychology. 2005; 114:522–536. doi:10.1037/0021-843X.114.4.522. [PubMed: 16351375]

Wolff HG, Preising K. Exploring item and higher order factor structure with the Schmid-Leiman solution: Syntax codes for SPSS and SAS. Behavior Research Methods. 2005; 37:48–58. doi: 10.3758/BF03206397. [PubMed: 16097343]

Whisman MA. Marital dissatisfaction and psychiatric disorders: Results from the national comorbidity survey. Journal of Abnormal Psychology. 1999; 108:701–706. doi:10.1037/0021-843X.108.4.701. [PubMed: 10609435]

Whisman MA. Marital distress and DSM-IV psychiatric disorders in a population-based national survey. Journal of Abnormal Psychology. 2007; 116:638–643. doi:10.1037/0021-843X.116.3.638. [PubMed: 17696721]

Whisman, MA.; Kaiser, R. Marriage and relationship issues.. In: Dobson, KS.; Dozois, DJA., editors. Risk factors in depression. Academic Press; San Diego, CA: 2008. p. 363-384.

Whisman MA, Sheldon CT, Goering P. Psychiatric disorders and dissatisfaction with social relationships: Does type of relationship matter? Journal of Abnormal Psychology. 2000; 109:803–808. doi:10.1037//0021-843X.109.4.S03. [PubMed: 11196008]

Whisman MA, Uebelacker LA. Prospective associations between marital discord and depressive symptoms in middle-aged and older adults. Psychology and Aging. 2009; 24:184–189. doi: 10.1037/a0014759. [PubMed: 19290750]

Whisman MA, Uebelacker LA, Weinstock LM. Psychopathology and marital satisfaction: The importance of evaluating both partners. Journal of Consulting and Clinical Psychology. 2004; 72:830–838. doi:10.1037/0022-006X.72.5.830. [PubMed: 15482041]

Whisman, MA.; Weinstock, LM.; Tolejko, N. Marriage and depression.. In: Keyes, CLM.; Goodman, SH., editors. Women and depression: A handbook for the social, behavioral, and biomedical sciences. Cambridge University Press; Cambridge, NY: 2006. p. 219-240.

Table 1

Means, Standard Deviations, and Bivariate Correlations of Predictor and Outcome Variables

	Husband Symptoms	Wife Symptoms	Husband Mar Sat	Wife Mar Sat	Conflict	Partner Support	Emotional Intimacy	Power & Control
Husband Symptoms *Averaged across time*	---							
Wife Symptoms *Averaged across time*	**.10**	---						
Husband Time 1 Marital Satisfaction	-.43****	-.32***	---					
Wife Time 1 Marital Satisfaction	-.28**	-.26**	**.68****	---				
Time 1 Conflict	-.34****	-.18	.40****	.42****	---			
Time 1Partner Support	-.25*	-.33***	.47****	.47****	.59****	---		
Time 1 Emotional Intimacy	-.22*	-.42****	.42***	.45****	.57****	.65****	---	
Time 1 Power & Control	-.36****	-.26**	.48****	.45****	.68****	.74****	.57****	---
M	9.33	12.78	41.29	40.69	6.47	6.91	7.27	6.92
SD	8.17	8.74	4.65	4.87	1.24	0.79	0.77	0.83

Note. $N = 103$ couples. Interspousal correlations are in bold.

Mar Sat = Marital Satisfaction.

* $p < .05$.

** $p < .01$.

*** $p < .005$.

**** $p < .001$.

Table 2

Aim 2: Initial Marital Satisfaction Predicting Internalizing Symptoms over Time

	Predictors of Husbands' Internalizing Symptoms (β_{1j})					**Predictors of Wives' Internalizing Symptoms (β_{2j})**				
	γ	***SE***	**95% CI *γ***	***t*(99)**	**Stand. Effect**	***γ***	***SE***	**95% CI *γ***	***t*(99)**	**Stand. Effect**
Husbands' Satisfaction	**-0.71**	**.24**	**(-1.17, -0.24)**	**-2.99** ***	**-.11**	-0.46	.26	(-0.96, 0.05)	-1.77	-0.06
Wives' Satisfaction	0.09	.20	(-0.31, 0.49)	0.42	.01	-0.16	.23	(-0.62, 0.30)	-0.68	-0.02
Percent of variance in β explained			20.07%					11.50%		

γ = unstandardized coefficient; *SE* = standard error; 95% CI γ = 95% confidence interval of unstandardized coefficient; Stand. Effect = $\gamma_{p1}/\sqrt{\tau_{pp}}$ (i.e., standardized change in symptoms for each 1 unit increase in the predictor).

*** $p < .005$.

Table 3

Aim 3: Marital Satisfaction and Relationship Processes Predicting Internalizing Symptoms

	Predictors of Husbands' Internalizing Symptoms (β_{1j})					**Predictors of Wives' Internalizing Symptoms (β_{2j})**				
	γ	**SE**	**95% CI γ**	**t(95)**	**Stand. Effect**	**γ**	**SE**	**95% CI γ**	**t(95)**	**Stand. Effect**
Husbands' Satisfaction	**-0.59**	**0.23**	**(-1.03, -0.15)**	**-2.62** *	**-.09**	-0.31	0.23	(-0.76, 0.13)	-1.37	-.04
Wives' Satisfaction	0.17	0.18	(-0.18, 0.52)	0.94	.03	0.00	0.22	(-0.42, 0.42)	-0.01	.00
Conflict	-0.65	0.91	(-2.44, 1.13)	-0.72	-.10	1.17	0.92	(-0.64, 2.98)	1.26	.15
Partner Support	1.25	1.16	(-1.01, 3.52)	1.09	.20	-1.07	1.55	(-4.10, 1.95)	-0.70	-.14
Emotional Intimacy	0.27	1.07	(-1.83, 2.37)	0.25	.04	**-4.05**	**1.48**	**(-6.96, -1.15)**	**-2.74** **	**-.51**
Power and Control	**-2.52**	**1.21**	**(-4.90, -0.15)**	**-2.09** *	**-.40**	-0.15	1.29	(-2.67, 2.37)	-0.11	-.02
Percent of variance in β explained			29.30%					23.35%		

γ = unstandardized coefficient; *SE* = standard error; 95% CI γ = 95% confidence interval of unstandardized coefficient; Stand. Effect = $\gamma_{p1}/\sqrt{\tau_{pp}}$ (i.e., standardized change in symptoms for each 1 unit increase in the predictor).

* $p < .05$

** $p < .01$.